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Volume 19 | Issue 3

Article 3

1957

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Recommended Citation

Behunin, Cecil (1957) "Observations of Pulmonary Emphysema on the Western Range," *Iowa State University Veterinarian*: Vol. 19 : Iss. 3 , Article 3.

Available at: https://lib.dr.iastate.edu/iowastate_veterinarian/vol19/iss3/3

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Observations of

Pulmonary Emphysema

On The Western Range

Cecil Behunin

WITHIN the last few years reports have appeared in the literature concerning a respiratory condition of cattle that had previously been given very little attention. In some areas of the West it is a major cause of cattle losses and cattle-men of these areas report the condition has been with them for many years. It is not restricted to the West, however, but has been reported in New York and Canada as well as widely separated areas of Wyoming, Colorado and Utah.

This article expresses my observations of the condition as manifested by range cattle in an area of south-eastern Utah. The cattle are mainly Herefords that are grazed on mountain ranges, elevation 7-10,000 ft., throughout the summer. In October they are returned to the irrigated valleys where they are turned into the fields to clean up the fence rows, grain stubble, and standing alfalfa (third or fourth growth). The frost has generally hit most of the plants by this time. These fields contain much green feed which is a welcome change from the dry fall grass of the mountains so the cows eat heartily.

Symptoms of respiratory distress come on quite suddenly, any time from one day to two weeks (average seven days) after

going onto the green feed. The animal is very reluctant to move and will stand with head extended laboring for breath. They breathe with a loud expiratory grunt from which the condition gets its common name, "the grunts". Rumination will stop and the animal may develop a constipation although at the time of onset there is usually a slight diarrhea due to the feed change.

Death may occur suddenly, especially if attempts are made to move or restrain the animal. Any death that occurs is usually within the first two or three days. If the animal survives longer than this, recovery is the rule although it may take several weeks.

The incidence is greater among the wet cows than those not suckling calves. Some ranchers say the dry cows are not affected, but cases have been reported. Bulls running with the cows can also be affected. The increased observance in wet cows has been attributed to the fact that most cows are suckling or have just weaned a calf at this time, so they outnumber the dry cows. It is possible that there may be some increased susceptibility in a wet cow due to the drain on her body from raising the calf.

In all cases the cow is two years old or older. Calves spending their first fall in the fields are never affected. Those ani-

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mals that have recovered from the condition will often be affected in following years although the incidence among all animals will vary considerably in different years.

The respiratory distress is attributed to a narrowing of the bronchioles and alveoli with a resulting rupture of the alveoli upon forced expiration. The only pathology present on necropsy is extensive interstitial emphysema, some edema and mucosal hemorrhage in the trachea and bronchi.

The condition appears to be the manifestation of an acute allergic phenomenon, associated with sensitization to some substance or substances present in many lush green plants. This substance may be concentrated in the plants during the fall due to a hardening process in preparation for frost, or produced as a result of disturbed metabolism due to the frost. In other reports rape and kale are often incriminated. The hay produced by these alfalfa fields is non-toxic and the condition can be prevented by feeding hay for a few days along with short exposure to the green feed before going onto the fields full time.

If it is an allergic reaction, then the treatment recommended by Jones (1954) and others would seem to be of value, provided it can be given without excessive excitement. Any exertion is more harmful than the relief obtained from medication. The recommended treatment is antihistamines in twice the usual dosage, given intramuscularly in conjunction with 10 cc. of epinephrine and repeated every eight hours to effect. Two to four treatments will be necessary.

The symptoms of this condition are very similar to those of pulmonary adenomatosis, but the history and necropsy will distinguish them. Another condition which may be confused with acute pulmonary emphysema is shipping fever, but with this the animal will usually have an elevated temperature which is not present in emphysema.

Reference

Jones, L. Meyer. 1954. *Veterinary Pharmacology and Therapeutics*. The Iowa State College Press, Ames, Iowa.

THE EFFECT OF MALNUTRITION ON THE SUSCEPTIBILITY OF THE HOST TO VIRAL INFECTION.

The effect of progressive long-term dietary protein depletion on viral susceptibility was investigated in two host-virus systems:

1. Swine influenza in male CF₁ mouse
2. Rous sarcoma virus in the New Hampshire Red chicken

Data were presented demonstrating a relationship between host protein nutrition and susceptibility to virus infection. This relationship was shown to be cyclic in character, involving phases of increased and decreased susceptibility. The cyclic susceptibility change demonstrated by these animals on a low protein diet was characterized by an initial phase of increased susceptibility, a secondary phase of increased resistance and a final phase of increased susceptibility. These resistance changes roughly correlated to periods of depot fat utilization (increased susceptibility), reserve protein utilization (increased resistance), and tissue breakdown subsequent to protein starvation (increased susceptibility).

Cyclic changes in resistance, as reported in this article, were given as evidence that the effect of host deficiency can not be explained simply on the basis of an inhibition of virus growth due to retarded cellular metabolism in the host.

It was proposed that the phases of viral susceptibility seen in protein deficient hosts are demonstrative of the dynamic interrelationship between the physiologic state and the resistant host. Dietary influences in the normal host, by producing similar metabolic changes, could have analogous implications on innate resistance.

Sprunt, D. H., M.D.; Flanigan, Clyde C., M.D., *The Journal of Experimental Medicine*, 104:687-704. (November) 1956.

Good water is the cheapest feed the dairyman has. Cows need about 300 pounds to produce 100 pounds of milk or about 12 to 15 gallons daily.

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